

# PATENT ABSTRACTS OF JAPAN

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(21)Application number : 2002-008005 (71)Applicant : NAMCO LTD

(22)Date of filing : 16.01.2002 (72)Inventor : OISHI MASUYA

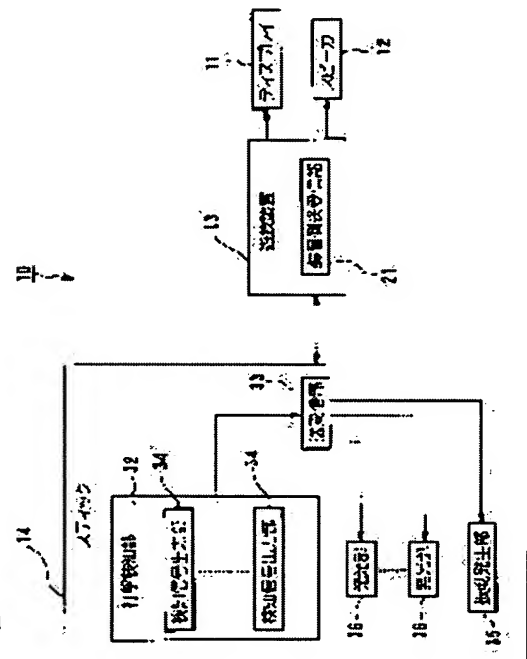
## (54) ELECTRONIC PERCUSSION INSTRUMENT

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To suppress the increase of the producing cost of an instrument without damaging amusement.

**SOLUTION:** A stick 14 is provided with a sheet-like beating detection part 32 wound so as to cover the outer surface of a bar-like member, a transmission and reception part 33 for transmission and reception part 33 for transmitting and receiving a signal to and from an instrument-side transmission and reception part 21 of a game machine 13, a vibration generation part 35 for generating vibration to the bar-like member with a prescribed timing instructed from the game machine 13 according to game contents, and a plurality of light emitting parts 36, etc., 36 which

flicker, etc., with a prescribed timing instructed from the game machine 13 according to the game contents and at prescribed positions in the longitudinal direction of the bar-like member. The sheet-like beating detection part 32 is constituted by distribute-arranging a plurality of detection signal output parts 34, etc., 34 outputting a beating detection signal consisting of an on signal or an off signal with beating force inputted from a proper object, and wound multiply on the outer peripheral surface of the bar-like member.



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AN - 2003-574877 [54]  
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 TI - Electronic percussion instrument has speaker which outputs predetermined hit sound according to hit detection signal from sheet-like hit detector provided on stick  
 AB - JP2003208157 NOVELTY - A sheet-like hit detector (32) is provided on the peripheral surface of a stick (14). A speaker (12) outputs a predetermined hit sound according to the detection signal from the sheet-like hit detector.  
 - USE - Electronic percussion instrument.  
 - ADVANTAGE - Increase of the manufacturing cost of instrument due to the provision of vibration sensor to detect the hit indirectly is suppressed.  
 - DESCRIPTION OF DRAWING(S) - The figure shows a functional block diagram of the electronic percussion instrument.  
 - speaker 12  
 - sound output unit 13  
 - stick 14  
 - hit detector 32  
 - (Dwg. 3/5)  
 1W - ELECTRONIC PERCUSSION INSTRUMENT SPEAKER OUTPUT PREDETERMINED HIT SOUND ACCORD HIT DETECT  
 SIGNAL SHEET HIT DETECT STICK  
 PN - JP2003208157 A 20030725 DW200354 G10H1/00 006pp  
 IC - G10G1/02 ; G10H1/00  
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PN - JP2003208157 A 20030725  
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 AB - PROBLEM TO BE SOLVED: To suppress the increase of the producing cost of an instrument without damaging amusement.  
 - SOLUTION: A stick 14 is provided with a sheet-like beating detection part 32 wound so as to cover the outer surface of a bar-like member, a transmission and reception part 33 for transmission and reception part 33 for transmitting and receiving a signal to and from an instrument-side transmission and reception part 21 of a game machine 13, a vibration generation part 35 for generating vibration to the bar-like member with a prescribed timing instructed from the game machine 13 according to game contents, and a plurality of light emitting parts 36, etc., 36 which flicker, etc., with a prescribed timing instructed from the game machine 13 according to the game contents and at prescribed positions in the longitudinal direction of the bar-like member. The sheet-like beating detection part 32 is constituted by distribute-arranging a plurality of detection signal output parts 34, etc., 34 outputting a beating detection signal consisting of an on signal or an off signal with beating force inputted from a proper object, and wound multiply on the outer peripheral surface of the bar-like member.  
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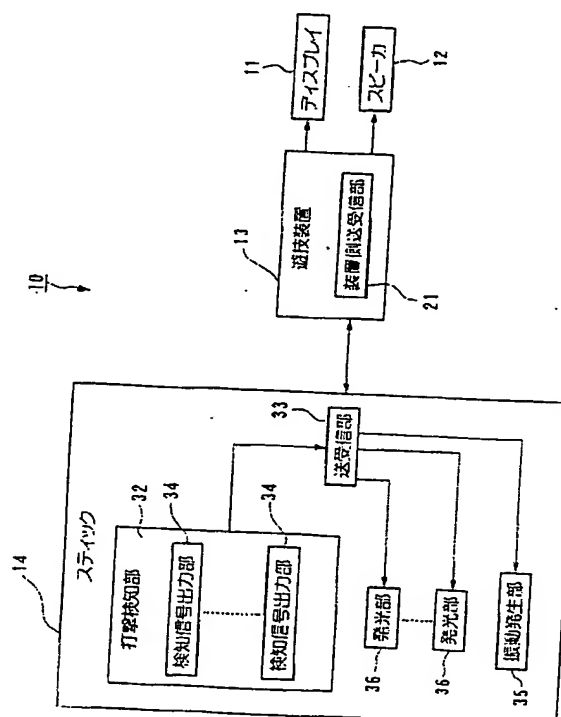
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(54) 【発明の名称】 電子打楽器

(57) 【要約】

【課題】 興趣性を損なうこと無しに、装置の製作費用の増大を抑制する。

【解決手段】 スティック14を、棒状部材の外面上を覆うようにして巻き付けられたシート状の打撃検知部32と、遊技装置13の装置側送受信部21と信号の送受信を行う送受信部33と、遊技内容に応じて遊技装置13から指示される所定のタイミングで棒状部材に振動を発生させる振動発生部35と、遊技内容に応じて遊技装置13から指示される所定のタイミングおよび棒状部材の長手方向の所定位置で点滅等を行う複数の発光部36、…、36とを備えて構成した。打撃検知部32を、適宜の物体から入力される打撃力によってオン信号あるいはオフ信号からなる打撃検知信号を出力する複数の検知信号出力部34、…、34を分散配置して構成し、棒状部材の外周面上に多重に巻き付けた。



## 【特許請求の範囲】

【請求項1】 棒状部材の外周面上に設けられ外部から入力される打撃入力を検知するシート状の打撃検知手段と、

前記打撃検知手段から出力される検知信号に基づいて、所定の打撃音を出力する打撃音出力手段とを備えることを特徴とする電子打楽器。

【請求項2】 前記打撃検知手段は前記棒状部材の外周面を覆うように巻き付けられていることを特徴とする請求項1に記載の電子打楽器。

【請求項3】 複数の前記打撃検知手段が、前記棒状部材の長手方向の複数の位置に設けられていることを特徴とする請求項1または請求項2の何れかに記載の電子打楽器。

【請求項4】 前記打撃検知手段は、前記打撃入力を検知してオン/オフの切替信号を出力しており、前記棒状部材の外周面上に多重に巻き付けられていることを特徴とする請求項1から請求項3の何れかに記載の電子打楽器。

【請求項5】 前記打撃検知手段は弾性変形可能なリング状に形成されており、前記棒状部材に対して着脱可能とされていることを特徴とする請求項1から請求項4の何れかに記載の電子打楽器。

【請求項6】 発光することによって打撃入力のタイミングおよび打撃位置を指定する発光手段および前記棒状部材を振動させて打撃入力のタイミングを指定する振動手段の少なくとも何れかを備えたことを特徴とする請求項1から請求項5の何れかに記載の電子打楽器。

【請求項7】 前記打撃検知手段と前記打撃音出力手段との間を無線通信により接続する送受信手段を備えたことを特徴とする請求項1から請求項6の何れかに記載の電子打楽器。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、適宜の物体を打撃した際に発生する衝撃に応じて打撃音を発生する電子打楽器に係り、特に、操作者が把持するスティック（棒状部材）に関するものである。

## 【0002】

【従来の技術】従来、例えば特開2000-29847 4公報に開示された電子打楽器装置のように、振動センサを内蔵したスティックから出力される打撃振動信号に応じて、スピーカから打撃音を出力する電子打楽器装置が知られている。この電子打楽器装置では、演奏者が適宜の物体をスティックにより打撃すると、打撃された物体の振動特性に応じた打撃振動信号が振動センサから出力され、この打撃振動信号が信号処理部へ出力される。そして、信号処理部は受信した打撃振動信号の周波数特性等を解析し、この解析結果に基づいて、予め設定された所定の楽音テーブル等をテーブル検索して、スピーカ

から所定の楽音を出力させるようになっている。

## 【0003】

【発明が解決しようとする課題】ところで、上記従来技術に係る電子打楽器装置においては、振動センサや振動センサから出力される打撃振動信号を解析するための信号処理部等の複雑かつ高価な部材を備えるために、装置構成が複雑化して、装置の製作費用が増大するという問題が生じる。本発明は上記事情に鑑みてなされたもので、興趣性を損なうこと無しに、装置の製作費用の増大を抑制することが可能な電子打楽器を提供することを目的とする。

## 【0004】

【課題を解決するための手段】上記課題を解決して係る目的を達成するために、請求項1に記載の本発明の電子打楽器は、棒状部材（例えば、後述する実施形態における棒状部材31）の外周面上に設けられ外部から入力される打撃入力を検知するシート状の打撃検知手段（例えば、後述する実施形態における打撃検知部32）と、前記打撃検知手段から出力される検知信号に基づいて、所定の打撃音を出力する打撃音出力手段（例えば、後述する実施形態における遊技装置13およびスピーカ12）とを備えることを特徴としている。上記構成の電子打楽器によれば、操作者が棒状部材を把持して適宜の物体に棒状部材を打ち付けると、棒状部材の外周面上に設けられた打撃検知部手段は、この適宜の物体と当接して、このときに発生する衝撃、つまり物体から入力される打撃入力を検知して、この検知信号を打撃音出力手段へ出力する。すなわち、棒状部材の外周面上に設けられたシート状の打撃検知手段が、適宜の物体と直接に接触することによって、打撃入力を検知するようになっており、例えば振動センサ等のように棒状部材に生じる衝撃を間接的に検知する場合に比べて、より単純な装置構成によって、興趣性を損なうこと無しに電子打楽器を製作する際に要する費用を削減することができる。

【0005】さらに、請求項2に記載の本発明の電子打楽器は、前記打撃検知手段は前記棒状部材の外周面を覆うように巻き付けられていることを特徴としている。上記構成の電子打楽器によれば、打撃検知手段が棒状部材の外周面を覆うように巻き付けられていることから、操作者は棒状部材の適宜の位置を物体に打ち付けることによって適宜の打撃音を出力させることができる。この場合、例えば棒状部材の位置に応じて、異なる打撃音が出力されるように設定することで、興趣性を向上させることができる。

【0006】さらに、請求項3に記載の本発明の電子打楽器は、複数の前記打撃検知手段が、前記棒状部材の長手方向の複数の位置に設けられていることを特徴としている。上記構成の電子打楽器によれば、棒状部材の長手方向の複数の位置に複数の打撃検知手段を設け、各打撃検知手段から出力される検知信号毎に異なる打撃音を出



力するように設定することで、興趣性を向上させることができる。

【0007】さらに、請求項4に記載の本発明の電子打楽器は、前記打撃検知手段は、前記打撃入力を検知してオン/オフの切替信号を出力しており、前記棒状部材の外周面上に多重に巻き付けられていることを特徴としている。上記構成の電子打楽器によれば、打撃検知手段が棒状部材の外周面上に多重に巻き付けられていることによって、棒状部材の径方向において複数の打撃検知手段が多層状に積層されるようになる。ここで、打撃検知手段が打撃入力を検知してオン/オフの切替信号を出力することから、例えば打撃力が弱い場合には、多層状に積層された打撃検知手段のうち、外周側に配置された打撃検知手段のみが検知信号を出力するようになる。一方、打撃力が強い場合には、より多くの打撃検知手段が検知信号を出力するようになる。このため、打撃音出力手段にて、例えば、受信した検知信号の事象数に応じて出力する打撃音の種類や音量等を変更することによって、単純な装置構成でありながら、より一層、興趣性を向上させることができる。

【0008】さらに、請求項5に記載の本発明の電子打楽器は、前記打撃検知手段は弾性変形可能なリング状に形成されており、前記棒状部材に対して着脱可能とされていることを特徴としている。上記構成の電子打楽器によれば、操作者は、リング状に形成された打撃検知手段を適宜に着脱することができ、例えば、遊技内容等に応じて装着個数や装着位置等を変更することによって興趣性を向上させることができる。

【0009】さらに、請求項6に記載の本発明の電子打楽器は、発光することによって打撃入力のタイミングおよび打撃位置を指定する発光手段（例えば、後述する実施形態における発光部36）および前記棒状部材を振動させて打撃入力のタイミングを指定する振動手段（例えば、後述する実施形態における振動発生部35）の少なくとも何れかを備えたことを特徴としている。上記構成の電子打楽器によれば、発光手段や振動手段によって、例えば遊技内容等に応じて、棒状部材を適宜の物体に打ち付ける際のタイミングや位置等を指示することによって、興趣性を向上させることができる。

【0010】さらに、請求項7に記載の本発明の電子打楽器は、前記打撃検知手段と前記打撃音出力手段との間を無線通信により接続する送受信手段を備えたことを特徴としている。上記構成の電子打楽器によれば、打撃検知手段と打撃音出力手段との間を無線接続することによって、棒状部材の操作性を向上させることができ、より一層、興趣性を向上させることができる。

【0011】

【発明の実施の形態】以下、本発明の一実施形態に係る電子打楽器について添付図面を参照しながら説明する。図1は本発明の一実施形態に係る電子打楽器10の構成

図であり、図2は図1に示すスティック14の要部断面図であり、図3は図1に示す電子打楽器10の機能ブロック図である。

【0012】本実施の形態による電子打楽器10は、例えば遊技内容を表示するディスプレイ11と、遊技内容に応じた楽音を出力するスピーカ12と、遊技内容を制御する遊技装置13と、スティック14とを備えて構成されている。

【0013】遊技装置13は、例えば赤外線や近距離無線電波等によってスティック14と無線通信を行う装置側送受信部21を備えており、スティック14から受信した打撃検知信号に基づいて、例えば予め設定された所定の楽音データテーブル等をテーブル検索して、所定の楽音をスピーカ12から出力させる。なお、遊技装置13とスティック14とは、適宜の通信線によって有線接続されてもよい。

【0014】スティック14は、棒状部材31の外面上を覆うようにして巻き付けられたシート状の打撃検知部32と、遊技装置13の装置側送受信部21と信号の送受信を行う送受信部33とを備えて構成されている。シート状の打撃検知部32は、例えば有接点スイッチ等のように、適宜の物体から入力される打撃力によってオン信号あるいはオフ信号からなる打撃検知信号を出力する複数の検知信号出力部34、…、34が分散配置されて構成されている。

【0015】ここで、複数の検知信号出力部34、…、34の配置位置、例えば棒状部材31の長手方向における位置に応じて異なる種類の打撃検知信号を出力するように設定し、遊技装置13において、これらの複数の打撃検知信号に応じて異なる楽音をスピーカ12から出力するようにしてもよい。例えば、棒状部材31の先端部近傍に配置された検知信号出力部34から出力された打撃検知信号に対しては、「カッ」等の楽音を出力し、棒状部材31の中央部近傍に配置された検知信号出力部34から出力された打撃検知信号に対しては、「ドン」等の楽音を出力する。なお、複数の検知信号出力部34、…、34の配置位置に応じて異なる種類の打撃検知信号を出力する代わりに、例えば、複数の検知信号出力部34、…、34の配置位置に応じて、複数の異なる信号伝達系を設け、各信号伝達系毎に独立して、遊技装置13の装置側送受信部21と信号の送受信を行うように設定してもよい。

【0016】さらに、シート状の打撃検知部32は棒状部材31の外周面上に多重に巻き付けられている。そして、遊技装置13は、多層状に積層された打撃検知部32、…、32から出力される打撃検知信号に応じて、スピーカ12から出力させる楽音の種類や音量等を変更するように設定されている。例えば、適宜の物体に対する打撃力が弱い場合には、多層状に積層された打撃検知部32、…、32のうち、外周側に配置された打撃検知部

32, ..., 32のみが打撃検知信号を出力するようになる。一方、打撃力が強い場合には、より多くの打撃検知部32, ..., 32が打撃検知信号を出力するようになる。このため、遊技装置13は、例えば、受信した打撃検知信号の事象数が多いほど、より高い音量にて所定の種類の楽音を出力するように設定されている。

【0017】さらに、スティック14は、遊技内容に応じて遊技装置13から指示される所定のタイミングで棒状部材31に振動を発生させる振動発生部35と、遊技内容に応じて遊技装置13から指示される所定のタイミングおよび棒状部材31の長手方向の所定位置で点滅等を行う複数の発光部36, ..., 36とを備えている。振動発生部35は、例えば棒状部材31の内部に設けられ、遊技内容に応じて遊技装置13から出力される駆動信号によってスティック14に振動を発生させることで、スティック14を適宜の物体に打ち付けるタイミングを、操作者に通知するようにされている。複数の発光部36, ..., 36は、例えば棒状部材31の外周面上に分散配置されており、遊技内容に応じて遊技装置13から出力される駆動信号によって所定位置に配置された発光部36が所定のタイミングで点滅等を行うことで、スティック14を適宜の物体に打ち付ける際のタイミングおよび位置を、操作者に通知するようにされている。

【0018】上述したように、本実施の形態による電子打楽器10によれば、棒状部材31の外周面上にシート状の打撃検知部32を多重に巻き付けただけの単純な構成でありながら、入力される打撃力の強弱に応じて異なる種類や音量等の楽音を出力することができ、電子打楽器10の興趣性を向上させることができる。しかも、操作者が把持するスティック14と遊技装置13とを無線接続したことにより、単純な装置構成でありながらスティック14の操作性を向上させることができる。

【0019】なお、本実施形態においては、シート状の打撃検知部32は棒状部材31の外周面上を覆うようにして巻き付けられるとしたが、これに限定されず、例えば図4に示す本実施形態の第1変形例に係る電子打楽器10のように、弾性変形可能とされた帯状の打撃検知部32の両端が接続されてリング状とされ、棒状部材31の長手方向の適宜の位置に、複数のリング状の打撃検知部32, ..., 32が装着されてもよい。この場合、複数の各打撃検知部32, ..., 32から出力される各打撃検知信号毎に異なる打撃音出力されるように設定する。これにより、打撃検知部32, ..., 32の取り付け位置を変更することによって、遊技時の演出を変更することができ、興趣性を向上させることができる。

【0020】また、本実施形態においては、シート状の打撃検知部32は棒状部材31の外周面上を覆うようにして巻き付けられるとしたが、これに限定されず、例えば図5に示す本実施形態の第2変形例に係る電子打楽器10のように、小片状の複数の打撃検知部32, ..., 3

2が、棒状部材31の外周面上に分散配置されてもよい。この場合、例えば棒状部材31の長手方向の位置に応じて、各打撃検知部32, ..., 32から出力される各打撃検知信号毎に異なる打撃音出力されるように設定する。ここで、小片状の打撃検知部32を棒状部材31の外周面上に装着する方法は、特に限定されず、例えば棒状部材31の外周面上に適宜の凹部を設け、この凹部に打撃検知部32を嵌装してもよいし、例えば棒状部材31の外周面上に適宜のねじ孔を設け、このねじ孔に螺合するねじ部を打撃検知部32に備えてもよいし、例えば棒状部材31の外周面上に打撃検知部32を着脱可能に接着してもよい。

【0021】また、本実施形態において、検知信号出力部34は、例えば有接点スイッチ等のように、適宜の物体から入力される打撃力によってオン信号あるいはオフ信号からなる打撃検知信号を出力するとしたが、これに限定されず、例えば感圧センサ等のように、入力された打撃力の大きさに応じて異なる打撃検知信号を出力するものであってもよい。

【0022】

【発明の効果】以上説明したように、請求項1に記載の本発明の電子打楽器によれば、棒状部材の外周面上に設けられたシート状の打撃検知手段が、適宜の物体と直接に接触することによって、打撃入力を検知するようになっており、例えば振動センサ等のように棒状部材に生じる衝撃を間接的に検知する場合に比べて、より単純な装置構成によって、興趣性を損なうこと無しに電子打楽器を製作する際に要する費用を削減することができる。さらに、請求項2に記載の本発明の電子打楽器によれば、打撃検知手段が棒状部材の外周面を覆うように巻き付けられていることから、操作者は棒状部材の適宜の位置を物体に打ち付けることによって適宜の打撃音を出力させることができ、例えば棒状部材の位置に応じて、異なる打撃音出力されるように設定することで、興趣性を向上させることができる。さらに、請求項3に記載の本発明の電子打楽器によれば、棒状部材の長手方向の複数の位置に複数の打撃検知手段を設け、各打撃検知手段から出力される検知信号毎に異なる打撃音を出力するように設定することで、興趣性を向上させることができる。

【0023】さらに、請求項4に記載の本発明の電子打楽器によれば、単純な装置構成でありながら、打撃入力の強弱に応じて出力される検知信号の事象数を可変とすることができ、より一層、興趣性を向上させることができる。さらに、請求項5に記載の本発明の電子打楽器によれば、操作者は、リング状に形成された打撃検知手段を適宜に着脱することができ、例えば、遊技内容等に応じて装着個数や装着位置等を変更することによって興趣性を向上させることができる。さらに、請求項6に記載の本発明の電子打楽器によれば、発光手段や振動手段によって、例えば遊技内容等に応じて、棒状部材を適宜の

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物体に打ち付ける際のタイミングや位置等を指示することによって、興趣性を向上させることができる。さらに、請求項7に記載の本発明の電子打楽器によれば、打撃検知手段と打撃音出力手段との間を無線接続することによって、棒状部材の操作性を向上させることができ、より一層、興趣性を向上させることができる。

【図面の簡単な説明】

【図1】 本発明の一実施形態に係る電子打楽器の構成図である。

【図2】 図1に示すスティックの要部断面図である。

【図3】 図1に示す電子打楽器の機能ブロック図である。

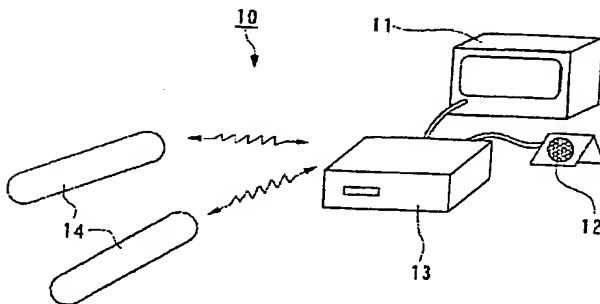
【図4】 本実施形態の第1変形例に係るスティックの要部断面図である。

【図5】 本実施形態の第2変形例に係るスティックの要部断面図である。

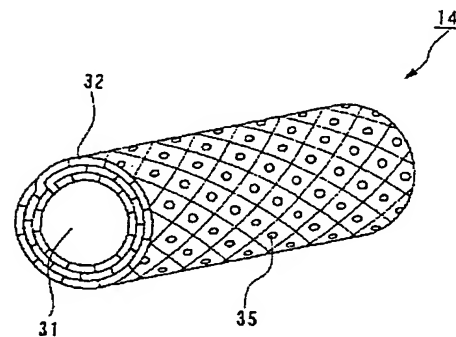
【符号の説明】

- 10 電子打楽器
- 11 スピーカ（打撃音出力手段）
- 12 遊技装置（打撃音出力手段）
- 31 棒状部材
- 32 打撃検知部（打撃検知手段）
- 35 振動発生部（振動手段）
- 36 発光部（発光手段）

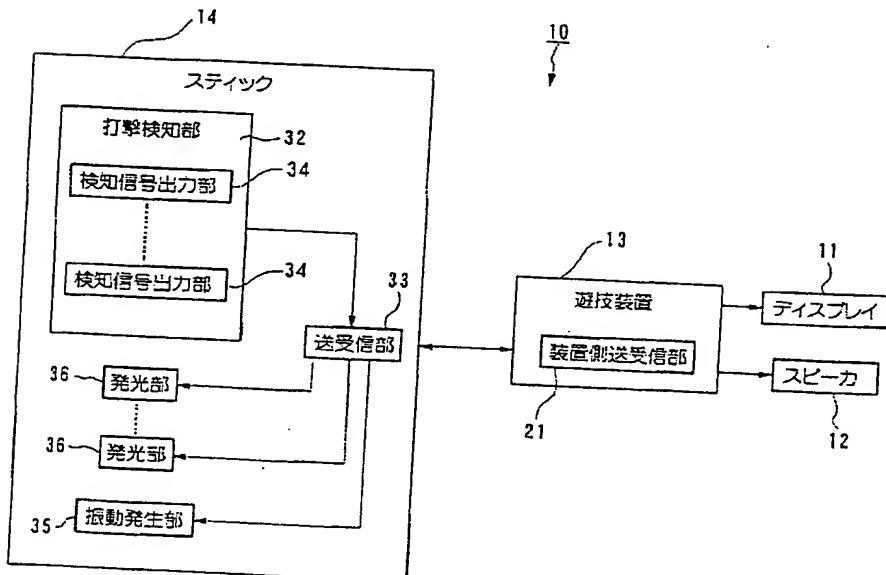
【図1】



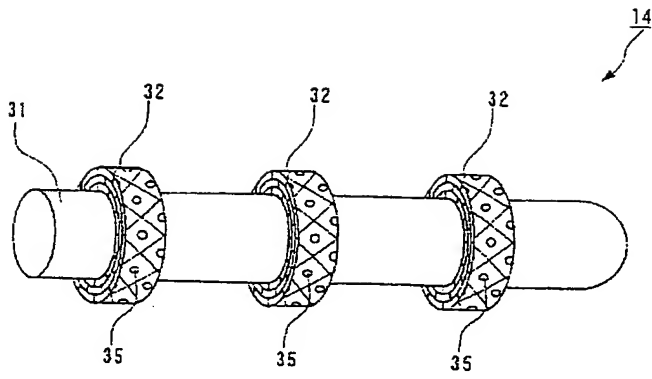
【図2】



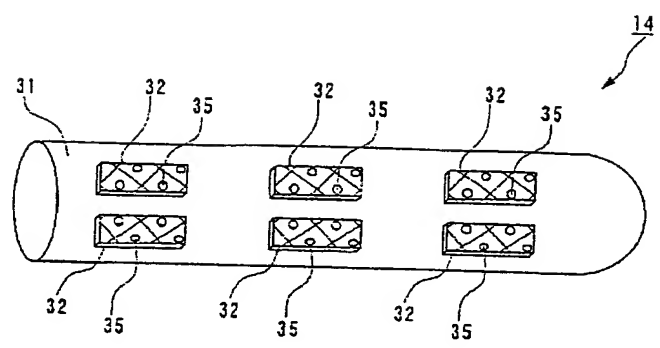
【図3】



【図4】



【図5】



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CLAIMS

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[Claim(s)]

[Claim 1] The electronic percussion instrument characterized by having the stroke detection means of the shape of a sheet which detects the stroke input which is prepared on the peripheral face of a cylindrical member and is inputted from the outside, and a stroke sound output means to output a predetermined stroke sound based on the detection signal outputted from said stroke detection means.

[Claim 2] Said stroke detection means is an electronic percussion instrument according to claim 1 characterized by being twisted so that the peripheral face of said cylindrical member may be covered.

[Claim 3] An electronic percussion instrument given in any of claim 1 characterized by forming said two or more stroke detection means in two or more locations of the longitudinal direction of said cylindrical member, or claim 2 they are.

[Claim 4] Said stroke detection means is an electronic percussion instrument given in any of claim 1 to claim 3 characterized by detecting said stroke input, outputting ON / off change signal, and being twisted on the peripheral face of said cylindrical member multiplex they are.

[Claim 5] Said stroke detection means is an electronic percussion instrument given in any of claim 1 to claim 4 characterized by being formed in the shape of [ in which elastic deformation is possible ] a ring, and supposing that it is removable to said cylindrical member they are.

[Claim 6] An electronic percussion instrument given in any of claim 1 to claim 5 characterized by the thing of an oscillating means to vibrate a luminescence means to specify the timing and the stroke location of a stroke input by emitting light, and said cylindrical member, and to specify the timing of a stroke input for which it had at least any they were.

[Claim 7] An electronic percussion instrument given in any of claim 1 to claim 6 characterized by having a transceiver means to connect between said stroke detection means and said stroke sound output means by radiocommunication they are.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the electronic percussion instrument which generates a stroke sound according to the impact generated when a proper body is hit, and relates to the stick (cylindrical member) which an operator grasps especially.

[0002]

[Description of the Prior Art] According to the stroke oscillating signal outputted from the stick having a sway sensor like the electronic percussion instrument equipment indicated by the conventional, for example, JP,2000-298474,A, official report, the electronic percussion instrument equipment which outputs a stroke sound from a loudspeaker is known. With this electronic percussion instrument equipment, if a player hits a proper body with a stick, the stroke oscillating signal according to the oscillation characteristic of the hit body will be outputted from a sway sensor, and this stroke oscillating signal will be outputted to the signal-processing section. And the signal-processing section analyzes the frequency characteristics of the received stroke oscillating signal etc., carries out table retrieval of the predetermined musical-sound table set up beforehand based on this analysis result, and makes a predetermined musical sound output from a loudspeaker.

[0003]

[Problem(s) to be Solved by the Invention] By the way, in the electronic percussion instrument equipment concerning the above-mentioned conventional technique, in order to have complicated and expensive members, such as the signal-processing section for analyzing the stroke oscillating signal outputted from a sway sensor or a sway sensor, an equipment configuration is complicated and the problem that the fabrication costs of equipment increase arises. This invention aims at offering the electronic percussion instrument which can control buildup of the fabrication costs of equipment, without having been made in view of the above-mentioned situation, and spoiling interest nature.

[0004]

[Means for Solving the Problem] In order to attain the object which solves the above-mentioned technical problem and starts, the electronic percussion instrument of this invention according to claim 1 The stroke detection means of the shape of a sheet which detects the stroke input which is prepared on the peripheral face of a cylindrical member (for example, cylindrical member 31 in the operation gestalt mentioned later), and is inputted from the outside (for example, stroke detection section 32 in the operation gestalt mentioned later), It is characterized by having a stroke sound output means (for example, the game equipment 13 and the loudspeaker 12 in the operation gestalt mentioned later) to output a predetermined stroke sound, based on the detection signal outputted from said stroke detection means. If according to the electronic percussion instrument of the above-mentioned configuration an operator grasps a cylindrical member and strikes a cylindrical member against a proper body, the stroke detection section means established on the peripheral face of a cylindrical member will contact this proper body, will detect the impact generated at this time, i.e., the stroke input inputted from a body, and will output this detection signal to a stroke sound output means. That is, compared with the case where the stroke detection means of the shape of a sheet established on the peripheral face of a cylindrical member detects indirectly the impact which detects a stroke input, for example, is produced in a cylindrical member like a sway sensor by contacting

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directly [ a proper body and directly / proper ], the costs required in case an electronic percussion instrument is manufactured without spoiling interest nature by the simpler equipment configuration are reducible.

[0005] Furthermore, the electronic percussion instrument of this invention according to claim 2 is characterized by twisting said stroke detection means so that the peripheral face of said cylindrical member may be covered. Since it is twisted so that a stroke detection means may cover the peripheral face of a cylindrical member, an operator can make a proper stroke sound output by striking the proper location of a cylindrical member against a body according to the electronic percussion instrument of the above-mentioned configuration. Interest nature can be raised by setting up so that a stroke sound which is different in this case according to the location of a cylindrical member may be outputted.

[0006] Furthermore, the electronic percussion instrument of this invention according to claim 3 is characterized by forming said two or more stroke detection means in two or more locations of the longitudinal direction of said cylindrical member. According to the electronic percussion instrument of the above-mentioned configuration, two or more stroke detection means can be formed in two or more locations of the longitudinal direction of a cylindrical member, and interest nature can be raised by setting up so that a different stroke sound for every detection signal outputted from each stroke detection means may be outputted.

[0007] Furthermore, the electronic percussion instrument of this invention according to claim 4 is characterized by for said stroke detection means detecting said stroke input, outputting the change signal of ON/OFF, and twisting it on the peripheral face of said cylindrical member multiplex. According to the electronic percussion instrument of the above-mentioned configuration, in the direction of a path of a cylindrical member, the laminating of two or more stroke detection means comes to be carried out to the shape of a multilayer by twisting the stroke detection means on the peripheral face of a cylindrical member multiplex. Here, since a stroke detection means detects a stroke input and outputs ON / off change signal, when striking power is weak, only the stroke detection means arranged at the periphery side among the stroke detection means by which the laminating was carried out to the shape of a multilayer comes to output a detection signal, for example. On the other hand, when striking power is strong, more stroke detection means come to output a detection signal. For this reason, though it is a simple equipment configuration by changing a class, sound volume, etc. of a stroke sound which are outputted with a stroke sound output means according to the number of events of the received detection signal, for example, interest nature can be raised further.

[0008] Furthermore, said stroke detection means is formed in the shape of [ in which elastic deformation is possible ] a ring, and the electronic percussion instrument of this invention according to claim 5 is characterized by supposing that it is removable to said cylindrical member. According to the electronic percussion instrument of the above-mentioned configuration, an operator can raise interest nature by being able to detach and attach suitably the stroke detection means formed in the shape of a ring, for example, changing the wearing number, a stowed position, etc. according to the content of a game etc.

[0009] Furthermore, the electronic percussion instrument of this invention according to claim 6 is characterized by the thing of an oscillating means (for example, oscillating generating section 35 in the operation gestalt mentioned later) vibrate a luminescence means (for example, light-emitting part 36 in the operation gestalt mentioned later) specify the timing and the stroke location of a stroke input, and said cylindrical member, and specify the timing of a stroke input for which it had at least any they were by emitting light. According to the electronic percussion instrument of the above-mentioned configuration, interest nature can be raised by directing timing, a location, etc. at the time of striking a cylindrical member against a proper body with a luminescence means or an oscillating means for example, according to the content of a game etc.

[0010] Furthermore, the electronic percussion instrument of this invention according to claim 7 is characterized by having a transceiver means to connect between said stroke detection means and said stroke sound output means by radiocommunication. According to the electronic percussion instrument of the above-mentioned configuration, by making wireless connection of between a stroke detection means and stroke sound output means, the operability of a cylindrical member can

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be raised and interest nature can be raised further.

[0011]

[Embodiment of the Invention] It explains referring to an accompanying drawing about the electronic percussion instrument concerning 1 operation gestalt of this invention hereafter. Drawing 1 is the block diagram of the electronic percussion instrument 10 concerning 1 operation gestalt of this invention, drawing 2 is the important section sectional view of the stick 14 shown in drawing 1, and drawing 3 is the functional block diagram of the electronic percussion instrument 10 shown in drawing 1.

[0012] The electronic percussion instrument 10 by the gestalt of this operation is equipped with the display 11 which displays the content of a game, the loudspeaker 12 which outputs the musical sound according to the content of a game, the game equipment 13 which controls the content of a game, and a stick 14, and is constituted.

[0013] Game equipment 13 is equipped with the equipment side transceiver section 21 which radiocommunicates with a stick 14 by infrared radiation, a short-distance wireless electric wave, etc., carries out table retrieval of the predetermined musical-sound data table set up beforehand based on the stroke detection signal received from the stick 14, and makes a predetermined musical sound output from a loudspeaker 12. In addition, cable connection of game equipment 13 and the stick 14 may be made by the proper communication wire.

[0014] A stick 14 is equipped with the stroke detection section 32 of the shape of a sheet twisted as covered the outside surface top of the cylindrical member 31, and the equipment side transceiver section 21 of game equipment 13 and the transceiver section 33 which performs transmission and reception of a signal, and is constituted. Like the owner contact switch, two or more detection signal output parts 34, --, 34 which output the stroke detection signal which consists of an ON signal or an off signal are distributed by the striking power inputted from a proper body, and the sheet-like stroke detection section 32 is constituted.

[0015] It sets up so that the stroke detection signal of a class which is different here according to the arrangement location of two or more detection signal output parts 34, --, 34, for example, the location in the longitudinal direction of the cylindrical member 31, may be outputted, and you may make it output a different musical sound according to two or more of these stroke detection signals from a loudspeaker 12 in game equipment 13. For example, to the stroke detection signal outputted from the detection signal output part 34 stationed near the point of the cylindrical member 31, the musical sound of "Don" etc. is outputted to the stroke detection signal which outputted musical sound, such as "KATSU", and was outputted from the detection signal output part 34 stationed near the center section of the cylindrical member 31. In addition, instead of outputting the stroke detection signal of a different class according to the arrangement location of two or more detection signal output parts 34, --, 34, according to the arrangement location of two or more detection signal output parts 34, --, 34, the signal transduction system from which plurality differs may be prepared, and for every signal transduction system, independently, you may set up so that transmission and reception of the equipment side transceiver section 21 of game equipment 13 and a signal may be performed.

[0016] Furthermore, the sheet-like stroke detection section 32 is twisted on the peripheral face of the cylindrical member 31 multiplex. And game equipment 13 is set up so that a class, sound volume, etc. of musical sound which are made to output from a loudspeaker 12 may be changed according to the stroke detection signal outputted from the stroke detection sections 32, --, 32 by which the laminating was carried out to the shape of a multilayer. For example, when the striking power to a proper body is weak, only the stroke detection sections 32, --, 32 arranged at the periphery side among the stroke detection sections 32, --, 32 by which the laminating was carried out to the shape of a multilayer come to output a stroke detection signal. On the other hand, when striking power is strong, more stroke detection sections 32, --, 32 come to output a stroke detection signal. For this reason, game equipment 13 is set up, for example so that there are many events of the received stroke detection signal, and the musical sound of a predetermined class may be outputted with higher sound volume.

[0017] Furthermore, the stick 14 is equipped with two or more light-emitting parts 36, --, 36 which perform a flash etc. in the predetermined location of the predetermined timing instructed to be the

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oscillating generating section 35 which generates an oscillation to the cylindrical member 31 from game equipment 13 according to the content of a game to the predetermined timing directed from game equipment 13 according to the content of a game, and the longitudinal direction of the cylindrical member 31. The oscillating generating section 35 is formed in the interior of the cylindrical member 31, and the operator is made for the timing which clamps a stick 14 on a proper body to be notified to it by making a stick 14 generate an oscillation with the driving signal outputted from game equipment 13 according to the content of a game. It is distributed on the peripheral face of the cylindrical member 31, and the operator is made for the timing and the location at the time of the light-emitting part 36 arranged in the predetermined location by the driving signal outputted from game equipment 13 according to the content of a game clamping a stick 14 on a proper body by performing a flash etc. to predetermined timing to be notified to two or more light-emitting parts 36, --, 36.

[0018] According to the electronic percussion instrument 10 by the gestalt of this operation, as mentioned above, though it is the simple configuration which twisted the sheet-like stroke detection section 32 on the peripheral face of the cylindrical member 31 multiplex, different musical sound according to the strength of the striking power inputted, such as a class and sound volume, can be outputted, and the interest nature of the electronic percussion instrument 10 can be raised. And by having made wireless connection of the stick 14 and the play equipment 13 which an operator grasps, though it is a simple equipment configuration, the operability of a stick 14 can be raised.

[0019] In addition, in this operation gestalt although [ the sheet-like stroke detection section 32 / the peripheral face top of the cylindrical member 31 ] it is twisted as it covers Like the electronic percussion instrument 10 concerning the 1st modification of this operation gestalt which it is not limited to this, for example, is shown in drawing 4 The ends of the band-like stroke detection section 32 whose elastic deformation was made possible may be connected, it may consider as the shape of a ring, and the proper location of the longitudinal direction of the cylindrical member 31 may be equipped with the stroke detection sections 32, --, 32 of the shape of two or more ring. In this case, it sets up so that a different stroke sound for each [ are outputted from two or more stroke detection sections 32, --, 32 of each ] stroke detection signal of every may be outputted. Thereby, by changing the installation location of the stroke detection sections 32, --, 32, the production at the time of a game can be changed and interest nature can be raised.

[0020] Moreover, in this operation gestalt, although [ the sheet-like stroke detection section 32 / the peripheral face top of the cylindrical member 31 ] it is twisted as it covers, two or more wafer-like stroke detection sections 32, --, 32 may be distributed on the peripheral face of the cylindrical member 31 like the electronic percussion instrument 10 concerning the 2nd modification of this operation gestalt which it is not limited to this, for example, is shown in drawing 5 . It sets up so that a different stroke sound for each [ are outputted from each stroke detection sections 32, --, 32 in this case according to the location of the longitudinal direction of the cylindrical member 31 ] stroke detection signal of every may be outputted. The approach of equipping with the wafer-like stroke detection section 32 on the peripheral face of the cylindrical member 31 here Especially, it is not limited, for example, a proper crevice is prepared on the peripheral face of the cylindrical member 31. The stroke detection section 32 may be fitted in this crevice, a proper screw-thread hole may be prepared, for example on the peripheral face of the cylindrical member 31, the stroke detection section 32 may be equipped with the thread part screwed in this screw-thread hole, and the stroke detection section 32 may be pasted up removable, for example on the peripheral face of the cylindrical member 31.

[0021] Moreover, in this operation gestalt, although [ the detection signal output part 34 ] the stroke detection signal which consists of an ON signal or an off signal like for example, an owner contact switch by the striking power inputted from a proper body is outputted, it may output a different stroke detection signal according to the magnitude of the striking power which was not limited to this, for example, was inputted like the pressure-sensitive sensor.

[0022]

[Effect of the Invention] As explained above, according to the electronic percussion instrument of this invention according to claim 1 The stroke detection means of the shape of a sheet established on the peripheral face of a cylindrical member by contacting directly [ a proper body and directly /

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proper ] The costs required in case an electronic percussion instrument is manufactured compared with the case where the impact which detects a stroke input, for example, is produced in a cylindrical member like a sway sensor is detected indirectly, without spoiling interest nature by the simpler equipment configuration are reducible. Furthermore, since according to the electronic percussion instrument of this invention according to claim 2 it is twisted so that a stroke detection means may cover the peripheral face of a cylindrical member, interest nature can be raised by setting up so that a stroke sound which an operator can make output a proper stroke sound by striking the proper location of a cylindrical member against a body, for example, is different according to the location of a cylindrical member may be outputted. Furthermore, according to the electronic percussion instrument of this invention according to claim 3, two or more stroke detection means can be formed in two or more locations of the longitudinal direction of a cylindrical member, and interest nature can be raised by setting up so that a different stroke sound for every detection signal outputted from each stroke detection means may be outputted.

[0023] Furthermore, according to the electronic percussion instrument of this invention according to claim 4, though it is a simple equipment configuration, the number of events of the detection signal outputted according to the strength of a stroke input can be made adjustable, and interest nature can be raised further. Furthermore, according to the electronic percussion instrument of this invention according to claim 5, an operator can raise interest nature by being able to detach and attach suitably the stroke detection means formed in the shape of a ring, for example, changing the wearing number, a stowed position, etc. according to the content of a game etc. Furthermore, according to the electronic percussion instrument of this invention according to claim 6, interest nature can be raised by directing timing, a location, etc. at the time of striking a cylindrical member against a proper body with a luminescence means or an oscillating means for example, according to the content of a game etc. Furthermore, according to the electronic percussion instrument of this invention according to claim 7, by making wireless connection of between a stroke detection means and stroke sound output means, the operability of a cylindrical member can be raised and interest nature can be raised further.

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\* NOTICES \*

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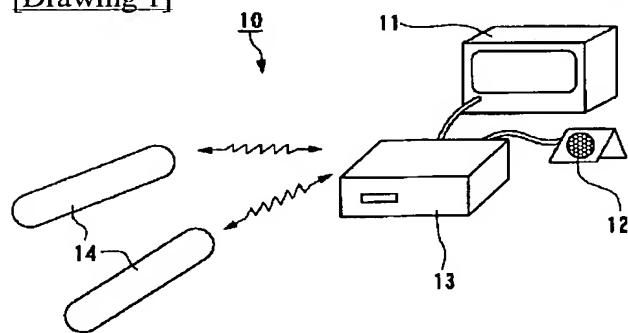
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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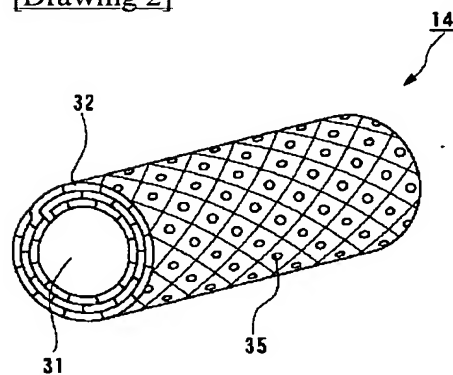
DRAWINGS

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[Drawing 1]

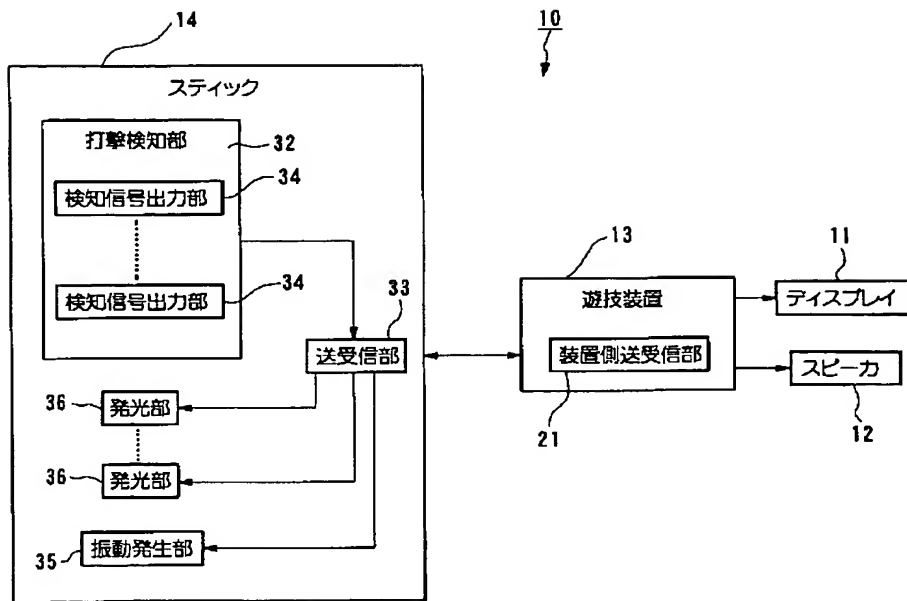


[Drawing 2]

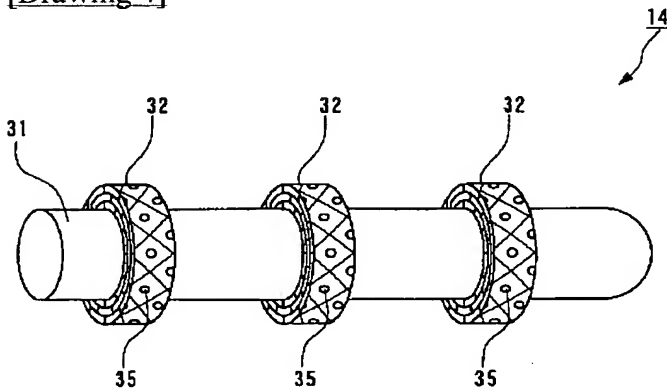


[Drawing 3]

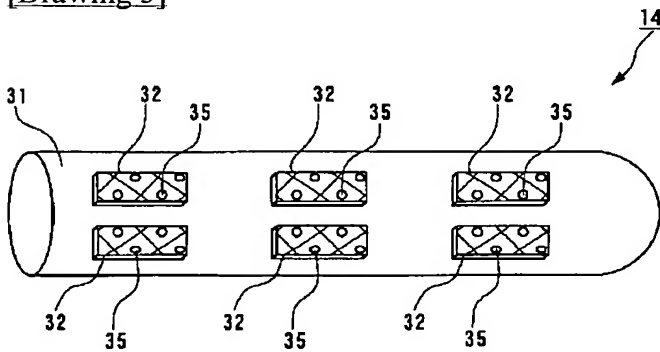
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[Drawing 4]



[Drawing 5]



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